

SPRAY DRIED PLASMA INCREASED FRESH MEAT FROM 13% TO 25% IN EXTRUDED DOG KIBBLE AND IMPROVED KIBBLE QUALITY

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BACKGROUND INFORMATION

Trends for increased fresh meat (FM) inclusion to improve digestibility and palatability are on the rise in the petfood industry. Increasing FM inclusion into dry extruded kibble is challenging for petfood manufactures. Variation in moisture and fat of the incoming meat ingredients adds to the complexity to produce high quality and consistent kibbles. Functional ingredients such as spray dried plasma (SDP) can be utilized to enhance product quality [1]. Previous research with SDP has demonstrated its benefit when included in the dry mash prior to extrusion to increase levels of FM [2].

STUDY OBJECTIVE

The objective was to evaluate if FM levels could be increased in commercially produced dog food utilizing SDP and its impact on palatability and digestibility.

ANIMALS, MATERIALS, AND METHODS

Extrusion was done at the New York production facility of BrightPet Nutrition Group, using a single screw extruder to increase FM from 13% to 25% with the addition of 3% SDP added in the mash before extrusion. Processing conditions were monitored during production along with kibble outcome measurements such as percent cook, moisture, protein, and durability. Palatability testing was conducted with 20 dogs for a 2-day test. Digestibility was conducted with 10 dogs in a crossover design using two 10-d periods. Digestibility and palatability data were analyzed using PROC GLM procedure of SAS, with significance set at $P < 0.05$.

SUMMARY

Overall, SDP included in the dry mash formula allows for higher feed rate of meat inclusion to 25% with increased palatability and digestibility while maintaining durability and product quality of the extruded dry kibble. Thus, depending on target meat inclusion rates, a functional ingredient such as SDP may be used during the extrusion process to produce quality dry kibbles with higher meat inclusion allowing manufacturers to expand their product lines.

REFERENCES

- [1] Campbell and Henry (2024) *J. Anim. Sci.* 102(Suppl. S3): 572.
[2] Campbell and Polo (2023) *J. Anim. Sci.* 101(Suppl. S3):445.

FORMULATION

	CONTROL DIET	SDP DIET
Fresh Salmon	13	25
Fish Meal White	7.5	7
Fish Meal Salmon	12.5	3
Field Peas	11.5	10
Chickpeas	11.5	10
Lentils	11	9.1
Tapioca	6.8	6.8
Canola Oil	6.5	6
Plasma	0	3
Dical	1.35	1.75
Other	18.35	18.35

¹Other: Potato, brewer's yeast, chicken fat, tomato pomace, chicken liver, and premix.

RESULTS

FECAL, BW, AND INTAKE

	CONTROL DIET 13%	SDP DIET 25%	SEM	P VALUE
Fecal Moisture, %	4.55	4.58	0.08	0.7776
Stool Score	3.89	3.90	0.03	0.9871
Final BW	12.23	12.29	0.03	0.2393
ADFI, g	264.7	268.2	9.41	0.8004

DIET AND KIBBLE CHARACTERISTICS

NUTRIENTS	CONTROL DIET 13% FM	SDP DIET 25% FM
Crude Protein, %	30.7	28.7
Crude Fat, %	15.3	15.4
Ash, %	7.89	7.58
Moisture, %	7.24	7.5
ME, kcal/kg	3677	3662
KIBBLE CHARACTERISTICS		
Cook, %	93.1	94.5
Durability, %	98.49	97.86
Hardness, Force, g	10774	10756
Bulk Density	517	500



DIGESTIBILITY RESULTS

